C-Scan Ultrasonic Inspection System Specifications

1) An ultrasonic C-Scan imaging system shall be provided that is a complete State-of-the-Art, Digital High Speed Industrial Ultrasonic data acquisition system with an immersion tank and multi axes, including X,Y,Z scanning bridge.

2) The system shall provide a 5-foot scanning envelope (5'L x 3'W x 2'H).

3) The system shall be powered by 110V, 20 amps.

4) The scanning speed shall be at least 20 inches per second.

5) The system shall provide a Frame Assembly and NEMA motor box.

6) The system shall be provided with a computer with Rack Mountable Quad Code CPU Processor, 4+ GB RAM, 3.2GHZ CPU, (2) USB, 250+ GB HD, DVD-CD-RW; Heavy Duty Power Supply and Windows 7.

7) The system shall be provided with a Keyboard, minimum 22" Monitor and Mouse.

8) The system shall be provided with a high resolution color printer.

9) The system shall be provided with 8 axis PCI-bus stepper motor controller with encoder interface (non-linear acceleration/deceleration). *Equivalent resolution and accuracy acceptable.

10) The system shall be provided with an immersion tank large enough to fully utilize the scanning envelope of (5'L x 3'W x 2'H).

11) The system shall be provided with a water pump and filter and be powered by 120V.

12) The system shall include a 10 MHz, .25 in. immersion transducer that works in both pulse echo mode or thru-transmission mode.

13) The system shall be a fully programmable PC resident Ultrasonic Instrument containing an UT pulser / receiver with adjustable gain, adjustable dampening and user defined DAC.

14) The inspection system shall have a bandwidth of 35 MHz and a dynamic range of 105db.

15) The inspection system shall provide fully programmable filters, dampening, 400v pulser voltage and 80dB (.1 dB/step) gain.

16) The system shall have selectable high pass and low pass filters.

17) The system shall include an integrated high-speed digitizer with a transient sample rate up to at least 100 Mega-samples/sec and a resolution of 12 bits (4096 levels).

18) The system shall include an on-board Digital Signal Processor (DSP) for fast data transfer and real time peak amplitude/time-of-flight calculation.

19) The PCI board shall be constructed using surface mount technology and have four ground plane layers.

20) The boards shall be manufactured with high density SMT technology and come in full length PC, PCI resident cards with a cooling fan.

21) The Data Acquisition software shall be a complete Windows 7 based acquisition and high resolution A/B/C-Scan software package.

22) The software shall be user friendly with intuitive pull-down menus and icons, real time A, B, and C-scan capabilities and 3D display, coupled with post processing models including zoom, size, clustering, and defect characterization.

23) Data from the software shall be capable of being exported to common formats, like TIF, JPG, BMP, and ASCII, for off-line analysis.

24) The data software shall be Windows based and allow the user to define a screen presentation.

25) The Plotting Screen shall be a full 1280 x 1024 x 256 SVGA.

26) The software shall allow for simultaneous plotting of real time A, B and C-scans for UT data.

27) The software shall support Full Image processing, including zoom, custom pallet and panning and support Multiple gates.

28) The software shall allow the user to choose display any number of real time (or replay) C-scan images at once with either time of flight or amplitude gates.

29) The system shall be provided with a full software package that includes; RF waveform storage, Bond and Cluster analysis, Chain scan, and 3D display.

30) A minimum of a single software license shall be provided for use on the UT inspection system.

31) Free upgrades for the software shall be provided for the length of the warranty period, minimum of one year.

32) The system shall provide the following Features:
   • Compatible with Windows operating systems
   • Multiple axis scanner support (stepper motor)
   • Sixteen (6) axes motion control (X, Y, Z,G, S axes and turntable axis) with encoders and motorized manipulator support
   • Real time display and acquisition of A-Scan, B-Scan and C-Scan
   • Multiple gate settings (minimum 4)
   • Post-processing features like zoom, pan, aspect changes, and cursors.
   • Easy file handling capabilities of data and scan setups.
   • Write to DVD in encrypted format
   • Display Amplitude or Time-of-Flight Images
   • Full Color or Gray Scale Palettes

- 2D and 3D Graphics
- RF Waveform Storage
- DAC
- FFT RF Waveform Spectrum Analysis
- Cluster Analysis Software
- Multi-Layer Gating Imaging
- Display multiple graphs on a screen
- Image multiple plots on a single graph with coloring options
- All graphs have full cursor readout capability, either one or double cursors
- Infinitely zoom and pan all graphs (2D and 3D included) for close-up analysis
- 3D C-Scan
- Statistics Analysis

33) The system shall provide a Motion Control System that provides the automated control for up to (8) independent axes.

34) The Stepper motor control and encoder feedback shall be capable of being used in either open or closed loop configurations for high speed and high accuracy scanning control.

35) The system shall be completely software programmable and provide for manual jog and step control.

36) User defined scan and index axes and scan and index resolutions shall be configurable via an intuitive and user friendly interface.

37) The system shall be provided with:
- All Motors that are Smart Stepper Motors
- 8 axis PCI based stepper motor controller card high resolution stepper and encoder control.
- Motor Drivers and Power Supply enclosed in a NEMA 12 Enclosure

38) The offerer shall be a fully compliant ISO9002 certified manufacturer.

39)   The offerer shall provide a minimum (1) year full factory warranty on all provided hardware.

40)   The offerer shall provide a spare parts list to be provided at system delivery.

41)   The offerer shall provide a Complete System User's manual.

42)   The offerer shall provide Training & Installation, On-Site, for (2) Days, minimum.